

**CLAIMS**

1. An apparatus for separating at least one component  
5 of a gas mixture by pressure swing adsorption,  
comprising, in a generally vertical vessel (1)  
comprising an upper dome (2), at least one  
adsorbent mass (4) separating a first vertical  
chamber (5) receiving the gas mixture to be  
10 separated, from a second vertical chamber (7)  
collecting a separated gas mixture, a generally  
horizontal flexible wall (9) being pressed against  
the upper end of the adsorbent mass (4) by  
pressing means (10, 11), characterized in that it  
15 comprises means (12; 14) for controlling the  
pressure in the volume between the flexible wall  
(9) and the dome (2).
2. The apparatus as claimed in claim 1, characterized  
20 in that the volume between the flexible wall (9)  
and the dome (2) communicates (12; 13) with one of  
said first and second chambers.
3. The apparatus as claimed in either of claims 1 and  
25 2, characterized in that it further comprises  
means (10) for ballasting the flexible wall (9).
4. The apparatus as claimed in either of claims 2 and  
3, characterized in that it comprises a line (12)  
30 connecting said volume to the second chamber (7).
5. The apparatus as claimed in either of claims 2 and  
3, characterized in that it comprises a passage  
(13) between said volume and the first

chamber (5).

6. The apparatus as claimed in the preceding claims,  
characterized in that the adsorbent mass (4) is  
5 annular, and the first (5) and second (7) chambers  
are concentric.
7. The apparatus as claimed in one of the preceding  
claims, for separating components of air, the  
10 adsorbent comprising at least one zeolite.